

DETAILED ACTION

1. In response to the Preliminary Amendment filed on January 10, 2006, claims 1-12 are pending.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 2 and 8-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Strothers et al (US Pat No. 5,143,590).

Regarding claim 1, Strothers et al. broadly discloses a sputtering target assembly comprising a target (40) and a backing plate (42) wherein the backing plate is made of a material having a conductivity less than or equal to 45 % IACS and wherein the material is selected from the group consisting of: Al alloys, Cu alloys, magnesium, magnesium alloys, molybdenum, molybdenum alloys, zinc, zinc alloys, nickel and nickel alloys (Fig. 3, column 4, lines 5-10, where the material is an Al alloy, and is known to have a conductivity of 34% IACS).

Regarding claim 2, Strothers et al. broadly discloses the conductivity of the backing plate material is less than 35% IACS (column 4, lines 5-8, where the material is an Al alloy, and is known to have a conductivity of 34% IACS).

Regarding claim 8, Strothers et al. broadly discloses the backing plate material is a 2000 series aluminum alloy selected from the group consisting of: 2014, 2017, 2024 and 2219 (column 4, lines 5-8).

Regarding claim 9, Strothers et al. broadly discloses the conductivity of the backing plate material is between 10% and 45 % IACS (column 4, lines 5-8, where the material is an Al alloy, and is known to have a conductivity of 34% IACS).

Regarding claim 10, Strothers et al. broadly discloses a sputtering target assembly comprising a target (40) and a backing plate (42) wherein the backing plate is made of a material having an electrical conductivity less than or equal to 35 % IACS (Fig. 3; column 4, lines 5-10, where the material is an Al alloy, and is known to have a conductivity of 34% IACS).

Regarding claim 11, Strothers et al. broadly discloses forming a backing plate from a material having a conductivity less than 45 % IACS, and bonding the backing plate to a sputter target (Fig. 3; column 4, lines 5-10, where the material is an Al alloy, and is known to have a conductivity of 34% IACS).

Regarding claim 12, Strothers et al. broadly discloses the backing plate material is selected from the group consisting of Al alloys, Cu alloys, magnesium, magnesium alloys, molybdenum, molybdenum alloys, zinc, zinc alloys, nickel and nickel alloys (column 4, lines 5-10, where the material is an Al alloy).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 4115

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
6. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Strothers et al. (US Pat No. 5,143,590) in view of Smith, Jr. et al. (US Pat No. 4,205,984).

Regarding claim 3, it is noted that Strothers et al. does not specifically teach the backing plate material is brass having a composition of at least 20% Zn. However, Smith, Jr. et al. discloses a brass alloy with at least 20% Zn (column 2, lines 9-12). Hence, it would have been

obvious to one of ordinary skill in the art at the time the invention was made to combine the references of Strothers et al. with Smith, Jr. et al. as it is old and well known that a backing plate material can be made from Cu alloys (as brass is) and furthermore, the alloy disclosed in Smith, Jr. et al maintains a conductivity of around 20% IACS (column 1, lines 37-39) which is within the desired range of the invention.

7. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Strothers et al. (US Pat No. 5,143,590) in view of Farquharson et al. (US Pat No. 6,379,478 B1).

Regarding claim 4, it is noted that Strothers et al. does not specifically teach the backing plate material is bronze, and the composition of the backing plate is less than 1.25 weight percent Sn. However, Farquharson et al. discloses a bronze backing plate with less than 1.25 weight percent Sn (column 3, lines 5-9). Hence, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the references of Strothers et al. with Farquharson et al. as it is old and well known that a backing plate material can be made from Cu alloys (as bronze is) and furthermore, the bronze alloy with less than 1.25 weight percent Sn has a conductivity around 40% IACS (Table 1, although elevated levels of Sn in the alloy in fact reduce the conductivity of the bronze alloy).

8. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Strothers et al. (US Pat No. 5,143,590) in view of Kim (US Pat No. 6,698,647 B1).

Regarding claim 5, it is noted that Strothers et al. does not specifically teach the backing plate material is a 5000 series Al with a composition greater than 2 weight percent Mg.

However, Kim teaches that the backing plate material is a 5000 series Al with a composition greater than 2 weight percent Mg (column 5, lines 24-33). Hence, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the references of Strothers et al. with Kim as it is old and well known that a backing plate material can be made from 5000 series aluminum, and Al alloys.

9. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Strothers et al. (US Pat No. 5,143,590) in view of Enomoto et al. (US Pat No. 6,227,432 B1).

Regarding claim 6, it is noted that Strothers et al. does not specifically teach the backing plate material is a 5000 series aluminum alloy selected from the group consisting of: 5052, 5056, 5083, 5086, 5154, 5252, 5254, 5356, 5454 and 5456. However, Enomoto et al. utilizes a 5000 series aluminum alloy (in this case 5083). Hence, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the references of Strothers et al. with Enomoto et al. as it is old and well known that a backing plate material can be made from 5000 series aluminum, and Al alloys, furthermore, the properties of 5083 as disclosed in Enomoto (having higher deformation resistance) is also important in sputtering assemblies.

10. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Strothers et al. (US Pat No. 5,143,590) in view of Bardus et al. (US Pat No. 6,183,686 B1).

Regarding claim 7, it is noted that Strothers et al. does not specifically teach the backing plate material is a 7000 series aluminum alloy selected from the group consisting of: 7075 and 7198. However, Bardus et al. teaches the backing plate material is a 7000 series aluminum alloy

(in this case 7075; column 4, lines 6-7). Hence, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the references of Strothers et al. with Bardus et al. as it is old and well known that a backing plate material can be made from 7000 series aluminum, and Al alloys.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ohhashi et al (US Pat No. 5,693,203), Hunt et al (US Pat No. 5,836,506), Parfeniuk et al. (US Pub No. 2002/0039810 A1), "Handbook of Materials Selection for Engineering Applications" by Murray, and "copper and Copper Alloys" by Davis, disclose the examples of old and well known material and the conductivity of Al and Cu alloys.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to DHANVIR AUJLA whose telephone number is (571)270-7842. The examiner can normally be reached on Monday thru Thursday, 7:30a.m til 5:00 p.m. alternative Fridays, BT.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheng Joe can be reached on (571)272-4433. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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